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09/663,564	09/15/2000	Gregory L. Slaughter	5181-47200	3521

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EXAMINER
HOANG, PHUONG N

ART UNIT	PAPER NUMBER
2126	7

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communicati n appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 September 2000_.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1 - 66_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1 - 66_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _3 - 6_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1 – 66 are presented for examination.

2.   Applicants are required to update the Serial number or Application number

mentioned in the specification (see page 1 of specification).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1 – 7, 10, 11, 13, 14, 16, 17, 19 – 21, 24, 25, 27 – 29, 33 – 39, 44 – 46,

48, 49, 51 - 55, 58, 59, 61 – 63, 65 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Buckle, UK patent no. 2,332,288 A, and in view of Jagannathan,

US patent no. 6,496,871.

5.   **As to claim 1,** Buckle teaches a method for representing a state of a process in

a data representation language in a distributed computing environment, the method

comprising:

    a.   executing the process within a first device (inherent when transporting the

    agent from L1)

    b.   converting a current state process into a data representation language

    representation of the current process (record object and object states (ie an

    agent) as a stream of data, page 38 lines 10 – 20);

    c.   storing the data representation language representation of the current

    computation process (the agent code is stored, page 39 lines 1 - 10);

    d.   wherein the data representation language representation of the current

    computation state of the process is configured for use in reconstituting (re-

    constructing the byte stream back into an object resident, page 38 lines 30 –

    page 39 lines 5) the process and resuming execution of the process (continue

    execution, page 38 lines 10 – 20).

    However, Buckle does not explicitly teach wherein the computation state of the

process comprises information about the execution state of the process.

    Jagannathan teaches wherein the process comprises information about the

execution (process execution, col. 6 lines 40 – 45) of the process.

    It would have been obvious to combine the teaching of Buckle and

Jagannathan's system because Jagannathan's execution state of the process would be

necessary during the migration of agents when the state of the process are converting into a format to communicate with the destination location.

6.   **As to claim 2,** Buckle teaches the steps of wherein the data representation language representation of the current computation state of the process is stored to a space using a space service (space used to store agent code of arrived stream, page 39 lines 1 - 10) wherein the space is operable to store documents including data representation language documents in the distributed computing environment, and wherein the space service is operable to store and retrieve documents to the space for processes in the distributed computing environment (agent can operate the stream content in ACL message, page 39 lines 1 - 10).

7.   **As to claim 3 and 4,** Buckle teaches the steps of wherein said storing the data representation language representation of the current computation state of the process comprises sending (transported, page 38 lines 15 - 20) the data representation language representation to the space service in one or more messages (stored locally at the location L2, page 39 lines 1 – 10).

8.   **As to claim 5,** Buckle teaches

        a.   a second device (remote host, page 38 lines 10 - 20) accessing the stored

        data representation language representation of the current computation state of

the process (the content is decoded and operated at remote host, page 38 lines
15 – page 39 line 10);

b.   reconstituting (re-constructing the byte stream back into an object resident
in remote host, page 38 lines 30 – page 39 lines 5) the process at the current
computation state within the second device from the data representation language
representation of the current computation state of the process; and

c.   resuming execution of the process within the second device from the
current computation state (continue execution at remote host, page 38 lines 10 – 20).

9.   **As to claims 6 and 7,** see the rejection for claim 2 above. Further, Buckle
teaches wherein said accessing the data representation language representation of the
current computation state of the process comprises receiving, the data representation
language representation from the space service in one or more messages (ACL
message is received at location L2, page 39 lines 1 - 10).

10.   **As to claim 10,** Buckle teaches

a.   the first device accessing the stored data representation language
representation of the current computation state of the process from the space service
(L1 transported agent to L2 residing on a single machine, p. 15 lines 20 – 29, and page
38 lines 5 – page 39 lines 10);

b.   reconstituting (re-constructing the byte stream back into an object resident
residing on a single machine, p. 15 lines 20 – 29, and page 38 lines 30 – page 39 lines

5) the process at the current computation state within the first device from the data

representation language representation of the current computation state of the process;

     c.   ending execution of the process within the first device (inherent), resuming

execution of the process within the first device from the current computation state

(continue execution at L2 residing on a single machine, p. 15 lines 20 – 29 and p. 38

lines 10 – 20).

11.   **As to claim 11,** Buckle modified by Jagannathan teaches the steps of wherein the

current computation state of the process includes one or more threads of the process,

and wherein said converting a current computation state of the process into a data

representation language representation of the current computation state comprises:

     including information describing the one or more threads (Jagannathan; threads,

col. 11 lines 7 – 20 and col. 12 lines 28 – 35) in the data representation language

representation of the current computation state, wherein the information describing the

one or more threads is configured for use in restarting the one or more threads (it is

inherent that the threads restart when the process resume execution) when resuming

execution of the process.

12.   **As to claim 13,** Buckle teaches the steps of wherein the current computation

state of the process includes one or more objects of the process, wherein an object is

an instance of a class in a computer programming language, and wherein said

converting a current computation state of the process into a data representation

language representation of the current computation state comprises:

   a. converting the one or more objects (record object and object states (ie an

agent) as a stream of data, page 38 lines 10 – 20) into data representation language

representations of the one or more objects;

   b.   including the data representation language representations of the one or

more objects in the data representation language representation of the current

computation state of the process (packing up agent and its state into the content

parameter of an ACL message, page 38 lines 12 – 15);

   c.   wherein the data representation language representations of the one or more

objects are configured for use in generating copies of the one or more objects (objects

can be recovered back into object resident in remote host, p. 39).

13.   **As to claim 14,** Buckle teaches the step of wherein said computer programming

language is the Java programming language (Java, page 2 lines 25 - 30).

14.   **As to claims 16 and 17,** Buckle modified by Jagannathan teaches the step of

wherein the process is executing within a virtual machine (Java virtual machine, col. 2

lines 55 – 65) executing within the first device.

15.   **As to claim 19,** it is the method claim of claims 1.a, b, and 5.b, c.   See rejection

for claims 1.a, b, and 5.b, c. Further, Buckle teaches sending the data representation

language to a second device (transported to a second location L2 on a remote host, page 38).

16. **As to claims 20 and 21,** Buckle modified by Jagannathan teaches the steps of wherein said sending the data representation language representation of the current computation state of the process to a second device comprises sending the data representation language representation in one or more messages to the second device (send ACL message to remote host, page 38).

17. **As to claims 24 and 25,** see claims 16 and 17 above.

18. **As to claim 27,** Buckle teaches:

a. a first device (host which sends agent, page 38) operable to execute the process;

b. a second device (remote host, page 38) comprising:

. a space operable to store documents including data representation language documents in the distributed computing system (space to store the ACL message at the location L2, page 39 lines 1 – 10);

. a space service operable to store and retrieve documents to the space for processes in the distributed computing environment (agent can operate at location L2, page 39 lines 1 – 10);

c. wherein the first device is configured to:

.   convert a current computation state of the process into a data

representation language representation of the current computation state (record object

and object states (ie an agent) as a stream of data, page 38);

.   send the data representation language representation of the current

computation state of the process to the space service (the ACL message is transported

to and stored at second location L2, page 38 and 39);

d.   wherein the space service is operable to store the data representation

language representation of the current computation state of the process to the space

(the ACL message is stored at the location L2, page 39 lines 1 – 10), and wherein the

data representation language representation of the current computation state of the

process is configured for use in reconstituting the process (re-constructing the byte

stream back into an object resident, page 38 lines 30 – page 39 lines 5) and resume

execution of the process (continue execution, page 38 lines 10 – 20).

However, Buckle does not explicitly teach wherein the process comprises

information about the execution state of the process within the first device.

Jagannathan teaches wherein the process comprises information about the

execution state (process execution, col. 6 lines 40 – 45) of the process.

It would have been obvious to combine the teaching of Buckle and Jagannathan

because Jagannathan's state process would be necessary for converting into a

standard format to communicate with the destination process in the migration of agents.

19.   **As to claims 28 and 29,** see rejection for claims 6 and 7.

20.   **As to claim 33,** see rejection for claim 19. This is the reserve process that the
first device at L1 location is able to receive and re-instructing the ACL message as
being processed at location L2 as being processed at L2.

21.   **As to claim 34 - 37,** see rejection for rejection of claim 11 - 14 above respectively.

22.   **As to claim 38 - 39,** see rejection for rejection of claim 16 - 17 above respectively.

23.   **As to claim 44,** it is the system claim of claim 19. See rejection for claim 19.

24.   **As to claims 45 and 56,** see rejection for claims 20 and 21 above.

25.   **As to claims 48 and 49,** see rejection for claims 24 and 25 above.

26.   **As to claim 51,** it is the software claim of claim 1. See rejection for claim 1
above.

27.   **As to claims 52 and 53,** see rejection for claims 2 and 3 above.

28.   **As to claims 54 and 55,** see rejection for claims 5 and 6 above.

29.   **As to claims 58,** see rejection for claim 10 above.

30. **As to claim 59,** see rejection for claim 16 above.

31. **As to claim 61,** it is the software claim of claim 19. See rejection for claim 19 above.

32. **As to claims 62 and 63,** see rejection for claims 20 and 21 above.

33. **As to claim 65,** see rejection for claim 24 above.

34. **Claims 8, 9, 41 – 43, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A, and in view of Jagannathan, US patent no. 6,496,871, and further in view of Graham, US patent no. 6,594,700.**

35. **As to claim 8, 9, 56, and 57,** Buckle and Jagannathan do not teach

    a.   generating an advertisement for the data representation language representation, wherein the advertisement comprises information to enable access to the stored data representation language representation, and wherein the second device accessing the stored data representation language representation comprises:

    b.   the second device accessing the advertisement for the stored data representation language representation;

c.   the second device locating the stored data representation language

representation using the information in the advertisement.

Graham teaches:

a.   generating an advertisement (convert the incoming protocol-specific data

into the canonical form for service advertising in the registry, col. 6 lines 1 – 67) for the

data representation language representation, wherein the advertisement comprises

information to enable access to the stored data representation language representation

(advertisement are stored within internal registry, col. 6 lines 50 – col. 7 lines 20), and

wherein the second device accessing the stored data representation language

representation comprises:

b.   the second device accessing the advertisement for the stored data

representation language representation (service provider uses advertisement to look up

for client requests, col. 6 - 7);

c.   the second device locating the stored data representation language

representation using the information in the advertisement (service provider uses

advertisement to look up for client requests, col. 6 - 7).

It would have been obvious to combine the teaching of Buckle and Jagannathan

and Graham's system because the Graham's service advertisement provide a unique

protocol to maximize the number of clients that can utilize the services.

36.   **As to claim 41,** it is the system claim of claim 1. See rejection for claim 1 above.

Further, Buckle and Jagannathan do not teach generating an advertisement for the data

representation language representation, wherein the advertisement comprises information to enable access to the stored data representation language representation, and wherein the second device accessing the stored data representation language representation.

Graham teaches generating an advertisement (convert the incoming protocol-specific data into the canonical form for service advertising in the registry, col. 6 lines 1 – 67) for the data representation language representation, wherein the advertisement comprises information to enable access to the stored data representation language representation (advertisement are stored within internal registry, col. 6 lines 50 – col. 7 lines 20), and wherein the second device accessing the stored data representation language representation.

It would have been obvious to combine the teaching of Buckle and Jagannathan and Graham's system because the Graham's service advertisement provide a unique protocol to maximize the number of clients that can utilize the services.

37.   **As to claim 42,** it is the system claim of claim 27.b. See rejection for claim 27.b.

Further, Buckle and Jagannathan modified by Graham teaches

b.   wherein the first device is further configured to send the advertisement for the stored data representation language representation to the space service (clients 410, 412 and 416 may request .....canonial representation, col. 6 lines 65 – col. 7 lines 40).

c.   wherein the space service is configured to store the advertisement for the

stored data representation language representation to the space (advertisement are

stored within internal registry, col. 6 lines 50 – col. 7 lines 20).

38.   **As to claim 43,** see rejection for claim 30 above.

39.   **Claims 12, 15, 22, 23, 47, and 64 are rejected under 35 U.S.C. 103(a) as**

being unpatentable over Buckle, UK patent no. 2,332,288 A, and in view of

Jagannathan, US patent no. 6,496,871, and further in view of Edward "Core Jini"

pages 405 – 410.

40.   **As to claim 12,** Buckle and Jagannathan do not teach the steps of wherein the

current computation state of the process includes one or more leases to services held

the process, and wherein the converting a current computation state of the process into

a data representation language representation of the current computation state

comprises:

including information describing the one or more leases in the data representation

language representation of the current computation state, wherein the information

describing the one or more leases is configured for use in reestablishing the one or

more leases to services for the process when resuming execution of the process.

Edward teaches including information describing the one or more leases (leases, pages 405 – 410), wherein the information describing the one or more leases is configured for use in reestablishing the one or more leases to services (renewing a lease) for the process when resuming execution of the process.

It would have been obvious to combine the teaching of Buckle and Jagannathan and Edward's system because Edward's lease is the data necessary to know how long the data available for accessing the resources.

41.   **As to claims 15, 47, and 64,** see rejection for claims 12 and 13 above.

42.   **As to claims 22 and 23,** see rejection for claim 15 above.

43.   **Claims 18, 26, 40, 50, 60, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A, and in view of Jagannathan, US patent no. 6,496,871, and further in view of Emmerich "Incremental Code Mobility with XML" p. 1 – 10.**

44.   **As to claims 18, 26, 40, 50, 60, and 66,** Buckle and Jagannathan do not teach the data representation language is XML.

Emmerich teaches XML is used for transferred on a network (XML; page 2 col. 2 – page 3 col. 2).

It would have been obvious to combine the teaching of Buckle and Jagannathan and Emmerich's system because Emmerich's XML is well-known as a flexible format to share on the World Wide Web, intranets, and elsewhere.

45.   Claims 30 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckle, UK patent no. 2,332,288 A, and in view of Jagannathan, US patent no. 6,496,871, and further in view of the "Official Notice".

46.   **As to claim 30,** Buckle and Jagannathan do not explicitly teach a third device. However, Buckle teaches the collection of agents may be transported across a plurality of physical resources, through the CORBA platform (abstract).

It would have been obvious to combine the teaching of Buckle and Jagannathan and the "Official Notice" to modify the Buckle's and Jagannathan's system to comprise a third device to provide needs for a large network.

47.   **As to claim 31 and 32,** see rejection for claims 28 and 29 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong N. Hoang whose telephone number is (703)

605-4239. The examiner can normally be reached on Monday - Friday 9:00 am to 5:30

pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (703)305-9678. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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Ph

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